

4. PYTHINA NUCULOIDES. *P. testa ovata, obtuse subcuneiformi, valde inæquilaterali, postice duplo longiore et rotundato-subattenuata, antice rotundato-subtruncata; solidiuscula, convexa, lævi, extus intusque albida, nitida; margine ventrali crenato, convexo, postice acclivi; margine dorsali antice abrupte declivi et (vix subconvexo) postice convexo et modice declivi; natibus subacutis; superficie interna sulcis obsolete inferne ornata: cardine valvulæ dextræ dente laterali flexo, solido, brevi, prominente, approximato, postice subtruncato, et dente apicali valido, trigono, prominente, unico; valvulæ sinistræ dente laterali longiore, solidiusculo, postice truncato, et cardinalibus duobus, quorum apicalis oblique prominet, minorque contiguus est sublaminaris.*

Long.  $\frac{1}{3}$ , lat.  $\frac{2}{3}$  poll.

*Hab.* Huacna, Society Islands, under stones on reefs (*Cuming*).

The shape resembles that of *Nucula nucleus*. The narrow cartilage is attached to the front of the lateral tooth; the hinge-margin exhibits a minute shagreen-like crenulation; the muscular impressions are strongly marked, and the pallial line perceptibly simple. Récluz's description of his *Erycina donacina* would apply to this shell, were it not for the dentition.

November 11, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. ON A NEW SPECIES OF SQUIRREL (*SCIURUS MACROTIS*) FROM BORNEO. BY J. E. GRAY, Ph.D., F.R.S. ETC.

(Mammalia, Pl. XLVI.)

Among the specimens of animals which the British Museum has lately received from Mr. Wallace from Sarawak, is a large, well-marked species of Squirrel, particular for having very large, longish pencilled ears like the European species, with a broad white streak on the upper part of each side, and a very broad full tail, grised, with large white tips to the hairs.

*SCIURUS MACROTIS.* (Pl. XLVI.)

Ears large, with large pencil of elongate hairs. Dark chestnut-brown, very minutely grised with pale tips to the hairs. Rump, outside of thighs and base of tail redder; point of thighs bright bay; feet blackish; upper part of the side with a broad pale streak; cheeks and inner side of legs paler; chin, throat, and beneath white; tail very broad, with very long white-tipped hairs.

Length 13, tail 11 = 24 inches.

*Hab.* Sarawak (*Mr. Wallace*).

2. OBSERVATIONS ON A LIVING AFRICAN LEPIDOSIREN IN THE CRYSTAL PALACE. BY J. E. GRAY, Ph.D., F.R.S. ACCOMPANIED BY A NOTE FROM MR. A. D. BARTLETT.

(Reptilia, Pl. XI.)

This animal has been exhibited for some months at the Crystal Palace, appears to be in good health, and has increased in size.

Mr. W. Hawkins, in the 'Illustrated News' (Supp. 20 Sept. 1856), which gives a very good figure of the animal from life, observes:—

"The three living specimens of this animal were brought to England from the Gambia, enclosed in balls of hard clay, where they had been for eight months without showing any signs of life, until those balls of hard clay were immersed in water, which caused the clay to crack and break up, discovering dark-coloured egg-like forms, which also presently burst, liberating their inmates, which briskly swam or rather dashed through the water, showing unmistakable signs of life by feeding voraciously upon very large worms, small frogs and pieces of meat that were presented them."

The *Lepidosiren* uses its tail to propel itself forward and upward towards the surface of the water. The subulate limbs are very much elongated; the front ones are furnished with a narrow membranaceous margin of nearly equal width the whole length of the hinder edge; the hinder one has a narrow membrane on the middle of the outer side; they are exceedingly mobile and flexible, and are used by the animal to direct its motions, and are more like feet than fins, especially when they are within reach of some fixed body which the animal can use as a fulcrum.

There are two processes on each side over the base of the anterior members, which have been regarded as gills by some authors\*; they are coloured like the rest of the body, and I could not discover, even when examined by a hand-magnifier of one inch focal length, that they were pervaded by any peculiar vascular structure, or furnished with any cirri or other processes usually found on the external gills of *Batrachia*. They scarcely moved during the time that I was examining the specimen, except when the animal was swimming, when they were used like the larger members, apparently to assist in directing its motions, and they evidently form part of the anterior members. They are placed rather close together somewhat above the base of the elongated finned filament. These limbs are used to support the animal some height above the surface of the gravel when it is at rest.

Indeed, all the motions of the animal much more resemble those of a *Triton* or *Lissotriton* than of an eel-shaped fish.

The upper and lower surfaces of the head are furnished with lines of mucous pores placed in a symmetrical manner on the two sides, similar to the pores observable on the head and chin of different kinds of fish, and of *Tritons* and *Lissotritons*: and there is a distinct

\* See Peters, Ann. and Mag. Nat. Hist. xvi. 348.

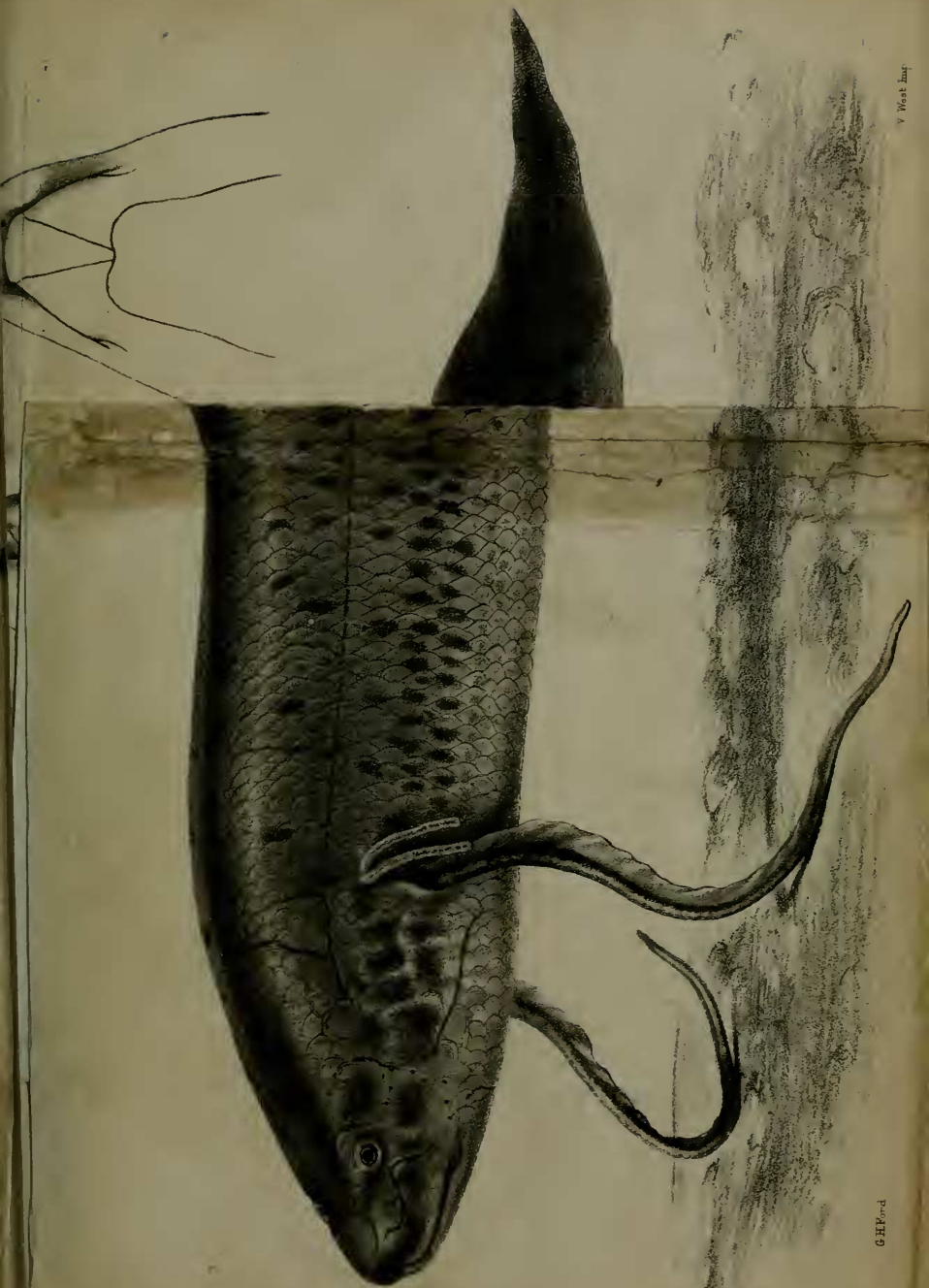




PLATE 1. COBRA & SNAKE

continuous line of pores, like the lateral line of fish and *Tritons*, which is continued on the tail some distance behind the base of the hinder members, but becoming less distinct at the hinder part of the series.

The eyes are of moderate size, scarcely raised above the surface, round, without any eyelids; the pupil is black, small, circular, less than one-third the diameter of the globe, with a narrow golden iris.

The Mud Fish is generally to be observed swimming about under the water, or resting at the bottom of the tank, supporting itself by its members, an inch and a half or two inches above the surface of the gravel, with its nose generally in the corner, bent down and partly hidden in the gravel.

The mouth is firmly closed by the overhanging upper lip, except in front, where there is a small oblong, transverse, horizontal opening on the outer edge of the lips, admitting the water to the small open external nostrils, which are on the middle of the under side of the upper lip. This opening does not extend to the hinder part of the lips, which are closed behind it, so that water cannot enter the mouth in that direction except through the nostrils.

In this quiescent state the lateral gill-opening is generally closed, but sometimes it is slightly elevated, and a small current appears to be emitted now and then from it, as if a small quantity of water were taken in by the nostrils and emitted by the gill-flap; but this action is not continuous nor very distinctly visible.

While remaining under the water the animal sometimes opens the mouth to its full extent, leaving it open for some time, dilating the throat by the action of the os hyoides; when fully dilated it closes its mouth, opens the gill-aperture, and contracting the throat emits a strong current of water through the lateral gill-aperture.

It occasionally but at uncertain periods rises perpendicularly to the top of the water, until the front part of the head and the whole mouth are exposed above the water; it then opens its mouth, which it retains open for a time, dilates its throat, as if taking in all the air it can contain, closes the mouth, descends under the surface and contracts its throat, as if it were forcing the air into the lungs (sometimes during this action one or two very small bubbles of air are emitted at the gill-aperture), and then the animal takes up its old position near the bottom of the vase.

I once saw the animal ascend and so take in air almost immediately after it had been passing a fresh supply of water to its gills. When I have been observing it, it appeared to take in air more frequently than water\*. It often rises with its body perpendicular, as

\* Mr. W. Hawkins in the 'Illustrated News' observes:—"It is seen habitually to rise to the surface of the water for a larger supply of atmospheric air, thrusting its open mouth above the surface."

Dr. Holbrook appears to have observed the same habit in the *Necturus maculosus* (which is probably the larva of the Hell-bender or *Protonopsis horrida*). He states that that animal in confinement "ascends to the surface (of the water), taking in a mouthful of air, and sinks again with it to the bottom."—Amer. Herpet. i. 113.

if it were going to take in free air, but descends again without reaching the surface of the water.

The organs of respiration of this animal are twofold:—

1. Well-organized gills on the inner edge of the branchial arches, as in fishes, and a regular gill-cover with a small oblong aperture in front of the base of the anterior members (see Owen, *Trans. Linn. Soc.* xviii. t. 25. f. 3, t. 26. f. 1).

2. Two well-developed cellular lungs of nearly equal size (see Owen, *Trans. Linn. Soc.* xviii. t. 25. f. 3, t. 26. f. 1, 2).

3. The nostrils are close together, situated on the under side of the inner lip, with their internal opening on the side of the mouth between the lips and the outer edge of the large inner series of teeth; the passage is short, as a probe is easily passed from the one opening to the other, and the inner nostrils are very evident in the living animal when it opens its mouth to take in air.

M. Bischoff observed these interior nostrils also in the *Curamuru* or *Lepidosiren paradoxa* of the Brazils.

The animal is, therefore, provided with well-developed organs for both ærial and aquatic respiration, and its manner of breathing is perfectly conformable to this organization: it is consequently the most perfectly amphibious animal, equally adapted for living on land or in water, that has come under my observation.

The character which best separates the Batrachian—as the Toad, Frog and Salamander—from the Fish, is, that in both the larva and perfect state they are provided with an external and internal nostril, and it is through this nostril that these animals take in or emit the air which they respire; while in fish, the water which they respire is taken in by the mouth, and after passing over the gills is emitted by the lateral aperture of the gill-flap; the nostril being only a sac, without any communication with the cavity of the mouth.

When a Batrachian respire, the mouth is kept closed, the throat being used like a pair of bellows to force the air into the lungs; and if the mouth is kept open, the animal dies for want of the power of respiring. In fish, on the contrary, the mouth is always more or less open, the fish either constantly gulping in the water, then closing the mouth or lips, and emitting it by the lateral opening; or the mouth is partially open, and the animal uses its tongue and the hinder internal edge of the lip as a kind of valve, by which the cavity of the mouth is closed and the water is forced to pass through the gills.

The *Lepidosirens* appear to take in water by the nostrils, and at the same time to respire both air as Batrachians and water as fish.

The generality of the Amphibia, as the Toads, Frogs, and Efts or Salamanders, are organized for aquatic respiration in their young and lower state, and for ærial respiration in their adult condition; but this animal has both kinds of organs in a state fit for perfect use at the same time, and the animal evidently uses them simultaneously.

It appears to me that the Mud-fish is much more nearly related to the Amphibia than to any fish that I am acquainted with; at the same time it evidently forms a particular group in that class.

Dr. Daniel, who has lived for several years on the Gambia and on Macarthy's Islands, informs me that the *Lepidosiren*, like the Mud Eel or true *Siren*, is only found in the rice-fields, which are for more than half the year under water, and that they are only procured by the natives towards the end of the dry season, when they are dug out of the nearly-dried mud. They are eaten fried, and like Eels have a rich oily flavour.

The habit of living in the mud is common to several Amphibia; thus the Mud-eel, or *Siren lacertina*, which has lungs and external gills, lives chiefly in mud, being dug out when the ditches of the rice-fields in Carolina are cleared. The Hell-bender or Mud-devil (*Protonopsis horrida*) and the Congo Snake (*Amphiuma*), which have internal gills and lungs and a small lateral gill-opening, live sunk in the mud often to the depth of 2 or 3 feet, especially in winter; and they and the *Siren lacertina* will live for some time out of water,

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two-poled lizard: they project themselves forward on their bony arms by the elastic spring of the tail exerted sideways; their progress is nearly as fast as a man will leisurely walk."—Zool. Journ. iv. 243.

"The Indians say that these fishes carry water within them for a supply on their journey. There appears to be some truth in this statement, for I have observed that the bodies of the Hassar do not get dry like those of other fishes when taken out of the water; and if the moisture be absorbed, or they are wiped dry with a cloth, they have such a power of secretion that they become instantly moist again; indeed it is scarcely possible to dry the surface while the fish is living."—*Loc. cit.* 243.

Dr. Hancock further observes, that a fish which he thinks is *Loricaria pleistomus* "is not only furnished with the common appendages for swimming, but also with four strong bony supporters, one attached to each of the pectoral and belly fins (*i. e.* constituting the first ray of each), by which the animal creeps on the bottom of the river, and

if it were going to take in free air, but descends again without reaching the surface of the water.

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Aquatic animals much more frequently bury themselves in the mud than is generally supposed. The common English Frogs and the large Efts bury themselves in the mud during the greater part of the winter, and this also is the case with *Dytisci* and other aquatic insects.

But some fish also, which have only gills adapted for aquatic respiration, have the same habit. Dr. Hancock observes, "When the water is leaving the pools in which they commonly reside, the Yarrow (a species of *Esox*, Linn.), as well as the round-headed Hassar (*Callichthys littoralis*), bury themselves in the mud, while all other fishes perish for want of their natural element, or are picked up by rapacious birds. The flat-headed Hassar (*Doras costata*), on the contrary, simultaneously quits the place and marches overland in search of water, travelling for a whole night, as is asserted by the Indians, in search of their object. I have ascertained by trial that they will live many hours out of water even when exposed to the sun's rays. Their motion over land is described to be somewhat like that of a two-poled lizard: they project themselves forward on their bony arms by the elastic spring of the tail exerted sideways; their progress is nearly as fast as a man will leisurely walk."—Zool. Journ. iv. 243.

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perhaps where there is little or no water, also being as it seems partly amphibious."—*Loc. cit.* 243.

From this account, it appears that the habits of these fish bear very little relation to those of the Mud-fish.

It is well known that many freshwater Mollusca which respire free air, and I believe some of those which are furnished with pectiniform gills for aquatic respiration, as *Paludinae* and *Valvate*, in the warmer climates, such as India, where the waters of the streams or ponds are dried up, bury themselves in the mud to a considerable depth like the Mud-fish, and like them remain in a torpid state until the return of the rainy season.

Sir William Jardine has described the kind of cocoon in the clay in which the Mud-fish are brought to this country; but I am informed by Mr. Bartlett that the cavity is always furnished with a small aperture opposite to where the nose of the animal is placed.

In referring this animal to the class of Fishes, authors have laid great stress on the fact of its being provided with a lateral line. Thus M. Duméril, in the last essay on the subject, notices the line, "which is ramified on the sides of the head as in *Chimera*," overlooking the fact that the *Triton cristatus*, the common Eft, has similar lines on both the sides and head. He compares the gill-rays and branchial aperture to that of *Mormyrus* and *Cobitis*, but they are equally like those of *Protonopsis*; and he compares the nostrils to those of the Lamprey, overlooking the fact that the animal is provided with nostrils communicating with the cavity of the mouth. See *Erp. Générale*, ix. 213.

I have been informed that this genus is found in other parts of Africa, as Senegal, where it is called *Tobal*, and the White Nile, from whence M. Armaud sent specimens to the Paris Museum in 1843; and Dr. Peters found a species in Quillemanes, which Peters and J. Müller have called *Rhinocryptes amphibia*.

In reply to a note I had addressed to him, I have received the following interesting communication from Mr. Bartlett, who at the same time informed me that he intended to have communicated it to the next meeting of the Society:—

"Crystal Palace, Sydenham,  
November 17th, 1856.

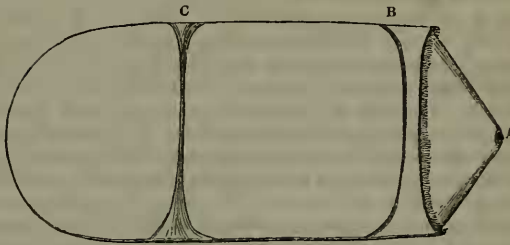
"DEAR SIR,—In reply to your note respecting the living Mud-fish, I beg to say that in the month of June last I received from Western Africa a case containing four specimens of this animal; each specimen was imbedded in a block of *dry hard muddy clay*, about the size of a quartern loaf; these blocks of clay were each sown up in a piece of canvas to prevent the clay crumbling or falling to pieces. According to the instructions I received from Capt. Chamberlayne (the gentleman who sent them), I placed them in a tank of fresh water at the temperature of 83 degrees; in doing this a portion of the clay crumbled off one of them and partly exposed the case in which the animal was contained; I was watching the operation when suddenly the *case or cocoon* rose to the surface of the water. I at first

thought the animal contained in it must be dead, but I shortly afterwards observed a slight motion: apparently the animal was endeavouring to extricate itself, and this it soon afterwards accomplished by breaking through the side of its tough covering; it swam about immediately, and by diving into the mud and clay, which by this time had become softened, rendered it difficult to make further observations; I removed the case or cocoon, which still floated, and which I now send for your examination. On the following morning I found that two more of the animals had made their appearance; their cases however were not to be seen—they evidently remained imbedded in the soft clay. In the course of the next day the fourth animal suddenly floated to the surface enveloped in its case; as it showed no signs of life I removed it, and found the animal had been dead some time, as it was much decomposed. At the time these animals first made their appearance they were very thin, and about 9 inches long; they began to feed immediately upon *earth-worms, small frogs, fish, &c.*, occasionally taking raw flesh. I saw them sometimes attack each other, and one of them (I imagine in endeavouring to escape) leaped out of the tank into the large basin in the Crystal Palace in which the tank was standing (this specimen is still at large among the water-lilies, &c.). The remaining two lived together for some time, apparently on good terms; but in the month of August the one now remaining in the tank seized its companion and devoured nearly half of it, leaving only the head and about half the length of its body. In feeding, this creature masticates the food much, frequently putting it forward almost quite out of its mouth and then gradually chewing it back again, and often (when fed upon raw flesh), after having so chewed it for some time, it will throw it out altogether. The growth of these animals is most extraordinary: in June, as I have before stated, they were about 9 inches long; in three months they attained their present size, which cannot be less than 18 inches in length. It rises frequently perpendicularly to the surface to breathe, and at other times it supports itself on its fin-like appendages, and with the aid of its tail raises its body from the ground, the fins being bent or curved backwards. The movement of this animal is generally very slow, and would give one an idea that it was very sluggish; this however I have good reason to know is not the case, as in attempting to capture the one at liberty in the large basin it darted away with the rapidity of an arrow. I have reason also to believe the animal finds its food as much by *scent as sight*. With reference to the cocoon which I herewith send for your examination, the end covering the nose of the animal is rather pointed, and has an aperture about the size of a pin's head, which I have no doubt enables the animal to breathe through during its state of torpor. The animal when in its case is coiled nearly twice round, and I observed in each of the blocks of clay a small hole about the size of a mouse-hole, which was quite smooth on the inside, as though the animal had crept through it.

"I am, dear Sir,

"Faithfully yours,

"A. D. BARTLETT."

*Cocoon of the Mud-fish (Lepidosiren annectens).*

- A. Breathing-hole at nose.  
 B. A thin partition.  
 C. An attaching band that passes through the space where the animal bends, as in *a*, fig. D.

Fig. D.



- D. A sketch of the animal in the cocoon.  
*a.* The position of the band C.      *b.* The head, nose and eyes.

3. NOTE SUR LE MESSAGER OU SERPENTAIRE DU CAP DE BONNE-ESPÉRANCE (SERPENTARIUS REPTILIVORUS, DAUD.).  
 PAR M. JULES VERREAUX.

Tous les naturalistes modernes s'accordent aujourd'hui à regarder l'oiseau dont il est question comme un vrai rapace, et ils ont d'autant plus raison, qu'il en a tous les caractères; seulement c'est un de ces types représentant dans cette famille la même place qu'occupe le *Cariama cristata*, Cuv., dans celle des Gralles.

Cette question étant complètement élucidée, nous allons donner sur cette espèce des détails de mœurs plus exacts que ceux donnés par devanciers, ayant été favorisés, mieux qu'eux, non seulement par un séjour de plus de vingt ans, mais encore par les voyages consécutifs que nous avons entrepris dans l'intérieur des terres, là où peu de naturalistes avant nous avaient été à même de pénétrer.

Reconnaissant comme tout le monde que les Cathartes et les Vautours sont des oiseaux de la plus grande utilité, nous avons pensé il y a bien des années que le Serpentaire était aussi un de ces oiseaux qui, après eux, était destiné à rendre d'immenses services à l'humanité.

Nous commencerons donc par dire que bien que cette espèce de l'Afrique Australe soit répandue sur presque tous les points de cette

partie du monde, elle n'est nulle part aussi abondante que sur la côte est en partant de la ville du Cap.

On ne la trouve que par paire, et l'on peut dire qu'à partir de quelques lieues de la ville, il n'est guère d'habitation qui ne possède son couple, qui paraît même faire partie intégrante de la propriété dont il ne dépasse pas les limites s'il n'est pas dérangé ; du reste, les lois et les colons leur accordent toute leur protection, ils ne sont nullement inquiétés ; cela tient aux services qu'ils rendent en détruisant chaque année une immense quantité de reptiles de toutes espèces qui font la base de leur nourriture, et surtout des serpents excessivement venimeux.

Comme la nature est prévoyante dans tout ce qu'elle fait, elle a donné à chaque être ses moyens de conservation. Aussi le Serpentaire a-t-il été modelé sur un moule approprié à son genre de vie ; c'est donc à cet effet que les jambes et les tarsi étant très-allongés, son œil perçant peut découvrir à une très-grande distance la proie qui, ne se doutant guère de son apparition, est souvent étendue sur le sable ou sur les plantes grasses qui tapissent le sol.

La forme élégante et majestueuse de cet oiseau devient en ce moment surtout plus gracieuse encore ; c'est là qu'il développe toute sa ruse afin de surprendre le reptile qu'il veut attaquer ; aussi n'approche-t-il qu'avec la plus grande circonspection, les plumes du col et du derrière de la tête dressées en avant annoncent le moment de la lutte : se ruant d'un bond sur l'animal, il le frappe du pied avec tant de force, que souvent il le terrasse du premier coup.

Cependant, s'il n'a pas réussi, et que le serpent furieux se dresse en épanouissant la peau de son cou comme cela arrive pour les espèces les plus dangereuses, l'oiseau forcé de rétrograder, fait un bond en arrière en attendant qu'il puisse saisir le moment opportun de recommencer.

Dressé en partie sur lui-même le serpent furieux fait mouvoir sa langue avec la dextérité de l'éclair, et pousse des sifflemens aigus qui retentissent au loin et semble tenir en respect son ennemi ; mais celui-ci dont le courage redouble à mesure que les difficultés augmentent, entr'ouvre les ailes, et revenant sur le reptile lui assène de nouveau de ces coups de pied terribles, dont personne ne peut se faire une idée, et qui ne tardent pas à le mettre hors de combat. Cependant, nous avons vu quelquefois de ces serpents s'élancer sur le Serpentaire, mais soit en ouvrant les ailes dont les premières rémiges seulement servent en quelque sorte de bouclier, soit en sautant en arrière, ou sur les côtés, il est certain d'éviter par ce manège la morsure de son antagoniste, qui, épuisé de fatigue, retombe toujours à plat sur le sol,—moment que choisit l'oiseau pour redoubler ses coups de massue qui, en lui mutilant la colonne vertébrale, achèvent de lui retirer toutes ses forces.

C'est alors que le Serpentaire victorieux s'élançant comme une flèche et posant le pied sur le cou du serpent, juste derrière la tête, commence à l'avaloir, chose qu'il pratique en prenant la queue d'abord ; et comme cette opération n'est pas de longue durée, même pour des reptiles de 5 à 6 pieds de longueur, sur plus de quatre

pouces de diamètre, dès qu'il arrive à la tête, il ne manque jamais d'en briser le crâne par plusieurs coups de bec qui le mutilent complètement.—L'opération faite, l'oiseau reprend sa course lentement jusqu'au lieu de son domicile, où il reste des heures entières repu, la tête rentrée dans les épaules.—Comme la majeure partie des oiseaux de proie, le Serpentaire rejette, sinon les plumes ou les poils, du moins les écailles des reptiles qu'il avale, et cela par pelottes comme les autres. Il est étonnant de voir la prodigieuse dilatation de la bouche de cet oiseau, car nous avons été témoin qu'il pouvait avaler des reptiles de plus de 6 pouces de circonférence.—Bien que le couple ne se quitte jamais, ils ne se secondent pas mutuellement pour terrasser une proie, et chacun chasse pour son compte.

Levaillant, qui le premier a donné une bonne figure et une exacte description du plumage de cet oiseau, ayant, comme nous, eu le malheur de perdre ses observations, aura sans doute faussé ses souvenirs lorsqu'il tenait la plume pour en décrire les mœurs, car ce qu'il dit au sujet de l'aile de l'oiseau qui lui servirait de massue, n'est pas exact, puisqu'elle ne lui sert que de bouclier : c'est avec la plante du pied qu'il terrasse ses ennemis. Nous en somme d'autant plus persuadé, qu'ayant suivi pas à pas le savant voyageur, mieux que personne nous avons été à même de lui rendre cette justice consciencieuse que peu de personnes avant nous s'accordaient à lui allouer.—Puissent les voyageurs suivre son exemple ! et la science d'observation, celle que nous regardons comme la clef de toutes les sciences naturelles fera plus de progrès.—Nous ajouterons que c'est en juillet que le Serpentaire a son plus beau plumage. Le mâle, qui est un peu plus petit que la femelle, a une coloration plus pâle, plus grise et plus blanche. C'est aussi vers le milieu de ce mois que commencent les amours, et tous deux travaillent à la construction ou au replâtrage du nid où plutôt de l'aire qui doit contenir la nouvelle famille. Cette aire est presque toujours placée sur la sommité d'un buisson élevé et très-touffu, le plus souvent un Mimosa. Elle est composée de buchettes et de terre, le centre en est garni de substances moelleuses, soit de plumes ou de laine, quelque fois même du pollen des plantes ; il est facile de compter le nombre d'années par les diverses couches qui la composent, comme pour les Aigles chaque année apporte au nid une couche nouvelle.—Il arrive souvent que les branches qui l'entourent poussant sur les côtés des jets, le cachent complètement à la vue, ce qui devient une sécurité de plus pour la famille.—Nous avons observé que dans les pays boisés, le Serpentaire faisait son aire sur les grands arbres. Du reste, n'importe où il se trouve, le couple s'y retire chaque soir pour y passer la nuit.—C'est en août qu'à lieu la ponte, elle est généralement de deux œufs, quelquefois trois. Ces derniers sont à peu près du volume de ceux d'une oie, mais d'une forme plus ronde d'un bout ; leur couleur est d'un blanc pur sans aucune trace de taches. Au bout de six semaines les jeunes éclosent ; ils sont alors recouverts d'un duvet blanc, qui au bout de cinq à six autres semaines laisse poindre çà et là des plumes ; ces dernières ont à la teinte près la même coloration que celles de l'adulte.

Ce qu'il y a de plus terrible et de plus fatigant pour les parents,

c'est que la faiblesse des pieds des jeunes les forçant de rester au moins six mois dans leur nid, ils sont tous deux obligés de chasser sans relâche pour assouvir l'appétit dévorant de leurs enfans qui absorbent une quantité si considérable de reptiles, qu'elle surpasse de beaucoup celles des adultes. Ce qui oblige les père et mère à des courses lointaines et à avoir recours, soit aux tortues, aux lézards, et même à de gros insectes comme des Sauterelles quand la disette des premiers se fait sentir. Mais la becquée ne se donne qu'avec des objets qui ont déjà subi une préparation dans le jabot, du moins, lorsque les jeunes sont encore trop faibles pour manger d'une autre façon ; car une fois assez forts pour avaler des reptiles complets, les parents ne se donnent plus cette peine, et les apportent tout entiers en ayant le soin de les choisir d'une taille proportionnée, ou en les morcelant pour en faciliter la digestion. Rien de plus curieux que de voir ces oiseaux qui ont acquis tout leur développement, se mouvoir sur leurs tarsi à l'aide de leurs talons, ce qui leur donne une tournure fort originale.

Nous avons remarqué que pendant la couvaison, le mâle seul était chargé de nourrir sa femelle qui n'abandonne jamais ses œufs ; aussi est-il facile de reconnaître par la présence des débris d'ossemens le local choisi pour l'habitation de ces oiseaux.

Comme presque tous les grands oiseaux de proie, le couple Serpentinaire ne souffre aucune autre espèce dans le canton qu'il a choisi pour son domaine, mais en revanche les petits oiseaux, et principalement les diverses espèces des Cisserins, choisissent-ils le voisinage de leur domicile pour y construire leurs nids qui sont suspendus tout autour de cette aire ; il semble que ces frères créatures cherchent, en agissant ainsi, à se mettre sous la protection des hôtes qui habitent le palais du canton. Chose étrange que la domination ! le droit du plus fort semble toujours être le point de ralliement de toutes les craintes. Il faut dire qu'en cette circonstance ces petits oiseaux devinent juste, car les serpents sont si nombreux que souvent ils sont victimes de leur voracité, tandis qu'ils ne redoutent en aucune façon celle des Serpentinaires qui s'enorgueillissent en quelque sorte de leur supériorité tant ils laissent approcher d'eux ces petites créatures.— Nous avons possédé pendant notre séjour au Cap de Bonne-Espérance un grand nombre de ces oiseaux, et depuis bien des années nous avons formé le souhait de voir introduire cette espèce dans nos colonies, lorsqu'en 1826 à notre retour au Cap, nous décidâmes M. Freycinet, ex-gouverneur de l'île Bourbon (aujourd'hui de la Réunion), à prendre plusieurs de ces couples pour en faire l'essai à Cayenne, où il se rendait pour prendre le même poste qu'il venait de quitter.— Pendant longues années nous avons cru cette tentative en plein succès, lorsque nous apprîmes que par la faute même des colons elle n'avait pas réussi, ceux-ci ayant détruit volontairement une des choses les plus utiles à leur conservation. Enfin comme nous venons de le dire, ayant eu en notre possession un nombre considérable de ces oiseaux, et ayant fait toutes les études possibles sur leurs mœurs, nous pouvons aujourd'hui répondre de la réussite de leur acclimatation, non-seulement dans les colonies d'Amérique et des

Indes, mais encore dans celle de l'Algérie où ces oiseaux rendraient un service immense. Réduit à l'état de domesticité, le Serpentaire se contente de viandes de toutes espèces; ce serait un excellent sergent de ville pour les basses cours, car comme l'Agami il mettrait l'ordre dès que quelques combats s'engageraient. Malheureusement le nombre considérable d'espèces d'animaux que nous tenions ensemble nous ont toujours empêché de voir cette espèce se reproduire chez nous.—Nous avons eu la preuve que s'il avait été possible de les tenir dans un espace plus grand et plus isolé, ces oiseaux auraient produit comme en pleine liberté; les trois œufs non à terme que nous avons trouvés nous ont fourni cette preuve.

Nous pensons donc que si on voulait introduire en Algérie d'abord un certain nombre de ces oiseaux on rendrait à cette colonie et aux autres un service réel, car le Serpentaire se chargerait de purger le sol où on le transporterait des reptiles nombreux qui causent chaque jour tant de calamités.

Nous recommandons aussi de porter la plus vive attention sur les diverses espèces de Grues, et principalement sur la *Carunculée*, qui, comme le Serpentaire, détruit un nombre infini de reptiles.

Comme ce dernier elle vivrait dans les mêmes climats et s'y reproduirait: celles que nous avons eues en notre possession se nourrissent de viande, de reptiles, d'insectes et même de grains.

On la trouve dans les plaines arides surtout sur la côte est, presque toujours isolée excepté vers la saison des amours. Mais, dès que les jeunes sont en état de reproduire, la famille se disperse. Il en est de même des jeunes Serpentaires qui sont chassés par leurs parents lorsque l'âge leur permet de s'accoupler, ce qui n'a lieu qu'à la seconde année. Comme il y a généralement mâle et femelle dans la même couvée, ils ne se quittent pas et imitent leurs parents en se choisissant un domaine convenable, souvent à une grande distance du lieu de leur naissance.

Nous saisissons cette occasion pour signaler aux Ornithologistes la différence que nous avons observée dans les Serpentaires de la partie orientale de l'Afrique, car ici ils sont d'une taille inférieure et d'une teinte beaucoup plus pâle en tout, différence qui nous semble par sa constance devoir former une espèce distincte, pour laquelle nous proposerions le nom de *Serpentarius orientalis*, si elle était reconnue comme telle.

Paris, le 9 septembre 1856,  
17 Rue St. Louis, au Marais.

#### 4. ON THE AUSTRALIAN DUGONG (*HALICORE AUSTRALIS*). BY MR. FAIRHOLME.

Moreton Bay, on the east coast of Australia (lat. 27° S), is a region of great interest to the zoologist. The southern end of it is formed by two long islands, extending together about sixty miles, within which the Bay is studded with a number of beautiful islets. On the small island of St. Helena, one of those vast congregations of



flying foxes takes place, which I have endeavoured to describe in a former paper.

The Dugong (*Halicore australis*) is still found there in considerable numbers, though I fear it is rapidly decreasing, as the chase of it in whale-boats manned by natives forms one of the great attractions of the Bay.

The blacks prefer the flesh and blubber to any other food, and the white people have found in its oil qualities similar to those of cod-liver oil, having used it successfully in some cases of consumption or debility. The native name for the Dugong is "Yungan." It is about 9 or 10 feet long when full-grown, and contains from five to eight gallons of oil. It feeds on a grass-like sea-weed growing on the large flats of the Bay, some parts of which are exposed at low water. As the tide recedes, the Dugongs retire into deeper water from the feeding-grounds. The natives tell us, that before white people came amongst them, and introduced boats and harpoons, they used to catch "yungan" by placing large nets across the channels through which they knew the animals would pass from the feeding-grounds. Since the establishment of a Pilot Station at Moreton Bay, the blacks have acquired great dexterity in the use of the whale-boat and harpoon, and are now constantly employed in the pursuit, either for themselves as food, or for Europeans, who collect the oil for sale. The chase is conducted with great caution and silence. The harpooner stands in the bow, and directs the steersman by the movement of the hand. As the Dugong must rise at intervals to blow, he endeavours to calculate the exact spot of rising, and launches the harpoon as it reaches the surface. Having only a short rope to the harpoon, the Dugong often drags the boat with considerable velocity, but is very soon exhausted.

The blacks have a grand feast over one, stripping off the whole of the flesh and blubber in one large sheet, leaving the carcass entire. Thus anyone wishing to procure skeletons entire could do so by going amongst the natives with a supply of tobacco and a little flour, as the Moreton Bay tribe has always been very friendly with the whites.

I regret to say that some entire skeletons which were being sent to England by a friend of mine, were placed with a large collection of shells in a vessel which was unfortunately burnt.

I have no doubt that the Dugong abounds in the bays and straits north of lat. 27°; but in none of these will the same facility be offered of procuring specimens as at Moreton Bay, where the blacks are so friendly, and are so well acquainted with the habits of this animal.

##### 5. THE BLACKS OF MORETON BAY AND THE PORPOISES. BY MR. FAIRHOLME.

Between the two long islands which form the south part of Moreton Bay, is a passage known as the South Passage, formerly used

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for ships entering the Bay, but now given up. Near the deserted Pilot Station at Amity Point, some of the natives may constantly be found during the warmer months of the year fishing for "Mullet," a very fine fish about the size of a mackerel. In this pursuit they are assisted in a most wonderful manner by the Porpoises. It seems that from time immemorial a sort of understanding has existed between the blacks and the Porpoises for their mutual advantage, and the former pretend to know all the Porpoises about the spot, and even have names for them.

The beach here consists of shelving sand, and near the shore are small hillocks of sand, on which the blacks sit, watching for the appearance of a shoal of Mullet. Their nets, which are used by hand, and are stretched on a frame about 4 feet wide, lie ready on the beach. On seeing a shoal, several of the men run down, and with their spears make a peculiar splashing in the water. Whether the Porpoises really understand this as a signal, or think it is the fish, it is difficult to determine, but the result is always the same; they at once come in towards the shore, driving the Mullet before them. As they near the edge, a number of the blacks with spears and hand-nets quickly divide to the right and left, and dash into the water. The Porpoises being outside the shoal, numbers of fish are secured before they can break away. In the scene of apparent confusion that takes place, the blacks and Porpoises are seen splashing about close to each other. So fearless are the latter, that strangers, who have expressed doubts as to their tameness, have often been shown that they will take a fish from the end of a spear, when held to them.

For my own part I cannot doubt that the understanding is real, and that the natives know these Porpoises, and that strange Porpoises would not show so little fear of the natives. The oldest men of the tribe say that the same kind of fishing has always been carried on as long as they can remember.

Porpoises abound in the Bay, but in *no other part* do the natives fish with their assistance.

## 6. MOLLUSCA NOVA COLLECTIONIS CUMINGIANÆ, DESCRIPTA A GUILIELMO DUNKER, MARBURGENSI.

### 1. TROCHUS FLAVIDUS.

*Tr. testa conica, solidula, unicolore pallide flavida, nitida; apice acuto, granoso; anfractibus levigatis planis 10, infera superaque suturæ parte cingulo elevato instructis; striis incrementi tenerrimis; anfractu ultimo obtuse angulato; basi convexiuscula sulcis quinis notata; apertura subtetragona.*

Patria ignota.

Species *Trocho dubio*, Phil., affinis est, qui vero colore olivaceo, pictura albo vel rufo flammulata, testa majore et latiore, anfractu ultimo magis angulato statim dignoscitur. Specimen, quod esset unicum 5 lin. altum,  $4\frac{1}{2}$  latum est.

## 2. TROCHUS PALLIDULUS.

*Tr. testa conica, lævigata, in apice acuta ibique granulosa, flavida, lineolis pallide luteis picta; anfractibus 10 planis ad suturam prominulis ideoque subimbricatis, superioribus cingulo obsoleto notatis, ultimo in circuitu rotundato; basi convexa, in medio sulcis nonnullis spiralibus arata; apertura subtetragona.*

Patria ignota.

Altitudo testæ 7 lin. ejusque diametros 5 lin. Species nostra a *Trocho Laugierii*, Payr., in primis differt colore, testa tenuiore et majore.

## 3. TROCHUS FLAMMIGER.

*Tr. testa conica, solida, glabra, flavo-albida, lineis undulatis vel flammulis luteis picta; anfractibus plano-convexis 10, sutura distincta divisis, ultimo in circuitu obtuse angulato; basi convexiuscula unicolore lutea, in medio alba, sulcis paucis umbilicariis signata; apertura rotundato-tetragona.*

Patria ignota.

Species forma sua *Trocho*, qui antecedit, similis, pictura et testa solida differt.

Hæ tres species ad genus *Leachanum Zizyphinus* dictum—idem, quod *Calliostoma*, Sow.,—pertinent.

## 4. BULLIA CUMINGIANA.

*B. testa angusta, subulato-turrita, flavo-albida, partim subcærulescente; anfractibus 10–11 convexiusculis, sutura satis profunda divisis, superioribus longitudine costatis transversimque cancellatis, inferioribus obsolete striatis, infra suturam creniferis, ultimo subinflato  $\frac{2}{3}$  totius testæ æquante; labro externo sulcis strisive incrementi notato; columella arcuata; faucibus albis.*

Patria ignota.

Hæc species, pæne 13 lin. longa, *Bullie turritæ*, Gray (Zool. of Beechey's Voyage, p. 126), peraffinis, ad genus *Leiodomus* Swainsoni pertinet, quod vero non satis firmatum esse videtur.

## 5. BULLIA ELEGANS.

*B. testa solida, pallide lutescente, elongato-turrita, in apice obtusa; anfractibus 8 planiusculis, lævibus, politis, sutura profunda callosa interdum castanea disjunctis, in superiore parte pliciferis, plicis albis sulco spirali cancellatis ideoque nodulis geminis instructis, ultimo tenuilirato ad basin carina pallide fusca notato, dimidia totius testæ parte paullo brevioris; labro incrassato lævissimo columellaque parum sinuata albis; faucibus fuscis.*

Patria ignota.

Hæc Bulliarum species elegantissima Buccino Natalensi Kraussano certe peraffinis, statura majore, testa solidiore, labro incrassato intus lævissimo plicisque sulco spirali quasi binodoso distinguenda est.

## 6. PLEUROTOMA CONCINNA.

*Pl. testa acute-turrita, subfusiformi, solidula, unicolore rufescente, in rostro rosea, costulis lineisque elevatis cincta; anfractibus circa 10 perparum convexis, sutura haud distincta sejunctis, ultimo spiræ altitudinem pæne æquante; canali subobliquo; labri incisura profunda.*

Patria ignota est.

Testa circiter 12 lin. longa,  $3\frac{2}{3}$  lin. lata, elegantissimarum una est sui generis; anfractus ultimus costulis multis validioribus et subtilioribus cinctus est; costa, si a sutura inde numeras, secunda, quæ labri fissura terminatur, tuberculorum undulatorum serie duplici cingitur. Costularum interstitia sub vitro oblique clathrata vel reticulata apparent.—Cochlea nostra ad Pleurotomas proprie sit dictas pertinens, habitu pæne *Pleurotomæ virginis*, Lam., sed multo minor, colore rufescente et imprimis rostro roseo ab aliis speciebus primo obtutu facile distinguenda est.

## 7. TROPHON MORRISI.

*Tr. testa solida, ovato-fusiformi, in apice acuta; anfractibus convexis longitudine plicatis transversimque tenuicostatis et liris, ultimo subventroso ceteris longiore; labro sulcato; cauda brevi, subrimata; canali aperto, paulum incurvo.*

Patria ignota.

Testa 14 lin. longa,  $7\frac{1}{2}$  lin. lata, ovato-acuta, subfusiformis. Anfractus 7 convexi sutura profunda disjuncti, plicis vel costis 10 æquidistantibus et liris transversis cingulisque elevatis instructi. Apertura ovata in canalem brevem apertum sensim transit. Color totius testæ albus; apicem versus flavescit. Fauces fasciis tribus fuscis notatæ sunt. An *Murex costularis*, Lam. Enc. Méth. 419. f. 8? Varices 7 indicat auctor: in figura 10 numerantur. Species *Fuso cinereo*, Say, Amer. Conch. t. 29, sane peraffinis, testa multo majore, anfractibus tumidioribus ideoque sutura profundiore et sculptura distinctiore satis discrepare videtur.

## 8. COMINELLA ELONGATA.

*C. testa ovato-acuta, subfusiformi, costis inæqualibus subnodosis lirisque subtilioribus cincta, griseo fuscoque variegata; anfractibus convexis; labro sulcato; labio superne uniplicato; canali longiusculo, paululum incurvo.*

Patria ignota.

Hæc species magnitudine et statura elongata fusiformi insignis, 22 lin. longa, 9 lin. lata est. Anfractus 7 convexi infra suturam haud profundam paullo appressi, costis numerosis plus minusve distinctis subnodosis cinguntur: ultimus eorum circiter  $\frac{2}{3}$  totius testæ adæquat; apertura angusta; labrum intus incrassatum et sulcatum; labium superne plica vel potius costa unica valida in tuberculum obsoletum exeunte instructum. Pictura parum insignis: fundus albidus et lutescens strigis maculisque irregularibus variegatus est; fauces fuscæ; labrum album. *Fusorum* genus plica columellæ deficiente satis distinctum est, ne dicam de ipsius animalis natura.

## 9. ADAMNSIA TYPICA.

*A. testa crassa, ponderosa, ovato-acuta, subturrita, longitudine plicato-costata, costulis minutissimis confertis scabris subsquamosis æquidistantibus cincta, albida, passim subrosea, fusco cingulata, cingulis in costarum interstitiis magis conspicuis; anfractibus 7 convexis, ultimo circiter  $\frac{3}{5}$  totius testæ æquante; cauda brevi, truncata; labro acuto, paullulum expanso, intus sulcato et incrassato; apertura angusta; columella lævissima; faucibus lacteis.*

Patria: ad Philippinarum insulas habitare dicitur hæc cochlea.

Species 15 lin. longa, 8 lin. lata, ad hoc usque tempus certe rarissima, ad *Cominellas* maxime accedit, a quibus vero aperturæ indole valde differt, cum costa valida in labii superiore parte insidente, qua *Cominellæ* insignes sunt, hæc cochlea plane careat. Præterea sculptura et totus testæ habitus tam singularis est, ut eam pro novi generis typo habendam esse putaverim.

## 10. PURPURA FASCIATA.

*P. testa ovata, solidiuscula, subgrisea fusco fasciata; spira exsertiuscula, acuta, subgradata; anfractibus tumidis, supra carinatis, transversim costulatis, costulis aperturam versus subimbriatis, anfractu ultimo ceteris pæne triplo majore, tumido, bicarinato, carinis nodiferis; apertura pallide fulva; labro acuto, intus sulcato, sulcis in margine fuscis.*

Patria ignota est.

Species elegans 12 lin. longa; præsertim fasciis vivide fuscis in fundo griseo-rubente insignis, ab omnibus quas novimus *Purpuris* veris satis distincta est.

## 11. CYTHEREA SUBTRIGONA.

*C. testa solida, ovato-trigona, modice convexa, concentrice obsoleteque striata, pæne lævi, inæquilatera, antice brevi subtruncata, postice producta, cuneiformi, carina obtusa ab umbonibus prominentibus ad latus posticum decurrente; lunula lanceolata.*

Patria ignota.

Species subtrigona, circiter 2 poll. longa, antice brevis, alta, postice producta et attenuata. Margo cardinalis anticus et posticus pæne rectilinei et valde declives sunt; margo basalis anticus linea pæne orbiculata terminatus est. Umbones subacuti se invicem fere tangentes valde porrecti sunt. Area lata subcordiformis, lunula lanceolata fossula levi circumscibitur. Ligamentum crassum breve. Cardo dentibus validis munitus est; dentes mediani vel primarii longiores sunt ut in *Cythereis* solent; dens lateralis posticus subtiliter granulato-striatus. Impressiones et linea palliaris ut in *Cytherea lusoria* pæne se offerunt. Color internus albus in dorso violaceus est. Statu integro testa ab epidermide cornea tegitur. Long., alt. et crass. ratio hæc est: 100, 86, 48.

## 12. PECTUNCULUS GRAYANUS.

*P. testa suborbiculari, convexa, solida, inæquilaterali, subglabra,*

*alba, pallide rubente et carneola, flammis rufis lineolisque numerosis acute angulatis varie picta, epidermide villosa induta, intus sordide alba, musculis pallioque fuscis; umbonibus tumidis.*

Longitudo speciminum majorum 25 lin. Long., altit. et crass. ratio hæc est: 100, 88, 62.

Patria Nova Seelandia. Attulit clar. Earle.

Testa hujus speciei transversa, suborbicularis antice rotundata brevis, postice paullum attenuata et longior, concentrice obsoleteque striata, lineis radiantibus subtilissimis confertissimis instructa pæne glabrata; umbones tumidi. Color et pictura aliis *Pectunculis* respondent, flammulæ lineæque acute angulatæ rufæ in fundo albedo et rubente umbones inflatos versus sensim clariores fiunt. Color internus albidus in regione pallii et musculorum fuscus est. Musculi in speciminibus adultis valde elevati apparent. Crenæ in valvarum margine basali crassæ utrinque sensim minores evadunt, in regione musculorum plane evanescent. Cardinis dentes laterales crassi, mediani obsolete vel evanidi. Epidermis villosa plurimam partem detrivit. Ligamenti area parva.

Inter *Pectunculos*, qui nobis innotuerunt, hæc species ad *Pect. flammem*, Reeve (Proc. Zool. Soc. 1843), maxime accedit.

## 7. MYTILACEA NOVA COLLECTIONIS CUMINGIANÆ, DESCRIPTA A GUIL. DUNKER.

### 1. MYTILUS SPLENDENS.

*M. testa elongato-ovata, concentrice striata; epidermide splendente fusca et nigricante in mediis valvis viridi; pagina interna livido-rubente, marginem inferiorem et posticum versus albida, margaritacea; umbonibus tumidis, gibbosis.*

*Hab.* Ad litus Peruanum.

Concha magnitudine *Mytili edulis* ambitu variat, nam modo est elongato-subtrigona, modo ovata. Umbones valde tumidi et gibbosi sub epidermide rubentes. Epidermis nitida maximam partem obscure fusca, in mediis valvis vivide viridis vel e viride nigricans, interdum zonis fuscis et virescentibus variegata. Sub vitro lineolæ subtilissimæ undulatæ ab umbonibus radiantes conspiciuntur. Cardo prorsus edentulus, margo totus simplex, ab epidermide late involutus. Fossula ad ligamentum recipiendum haud profunda.

### 2. MYTILUS ROSTRATUS.

*M. testa ovato-acuta, ventrosa, solida, unicolore fusco-violacea, longitudinaliter costata, costis mature furcatis; epidermide nigra; apicibus rostriformibus extrinsecus curvatis; cardine dentibus nonnullis munito.*

*Hab.* In litore insulæ Van Diemen.

Testa  $20\frac{1}{2}$  lin. longa,  $8\frac{1}{2}$  lin. alta, 7 lin. lata. Altitudo maxima in mediis valvis sita est. Valvarum ambitus plus minusve ovatus, ita ut nullibi angulus distinctus sit et margines unus in alterum sen-

sim transeant. Pars media basalis semper est ventrosa. Costæ ab apicibus acutis rostriformibus exeuntes, in omni incremēti stadio pluries diffunduntur marginem posticum versus sæpius evanescentes. Totus margo crenulis circumdatur. Cardio denticulis duobus vel tribus in utraque valva munitus est; interdum denticulus unus dextræ valvæ a tuberculis duobus sinistræ recipitur. Ligamentum crassum et latum satis profunde immersum est. Pagina interna parum nitet.

Species nostra *Mytilo purpurato* (*Modiolæ*, Lam.) affinis, qui testa minore, solidiore, apicibus obtusis, cardine tenerrime crenato, costis crassioribus aliisque notis differt.

### 3. MYTILUS HORRIDUS.

*M. testa magna, crassa, oblique ovata, postice dilatata, modice convexa, concentrice plicoso-striata, alba, epidermide fusca lamellosa, postice horride barbata vestita; umbonibus magnis, obtusis, curvatis; dorso et latere postico æqualiter arcuatis, basi antice valde sinuata.*

*Hab.* In litore Novæ Hollandiæ septentrionali.

Concha magna, crassa, 60 lin. longa, 32 lin. alta, 20 lin. lata est. Margo dorsalis arcum æqualem formans, in marginem posticum pæne circularem sensim transit. Margo ventris antice valde sinuatus est. Umbones obtusi, inflexi et disjuncti, ætate progrediente erosi. Epidermis crassa lamellosa in postico conchæ latere pilis et setis horridis obducta est. Ligamentum crassum pro magnitudine testæ breve. Cardio prorsus edentulus. Color paginæ internæ sordide albus languidus, omni pæne nitore margaritaceo caret. Species hæc magnifica a *Mytilo torto*, Dkr., præsertim rima recta distinguitur.

### 4. MYTILUS ATROPURPUREUS.

*M. testa oblongo-ovali, subtrigona, modice convexa, purpurea, epidermide atra obducta, concentrice striata, sulcis radiantibus subtilissimis confertissimis exarata; dorso subcompresso, in medio æqualiter curvato, interdum angulato; umbonibus terminalibus subtumidis, incurvis paullulum distantibus; margine basali antierius plus minusve sinuato; cardine utriusque valvæ denticulis nonnullis munito.*

*Hab.* In Africa occidentali. Suspicio hanc speciem in aqua dulci vel semisalsa vixisse, nam ejusdem byssus contexta est cum *Melania* cujusdam fragmentis.

Concha adulta 15 lin. longa, 9 lin. alta, tenuis, habitu inconstans, formam *Mytili edulis* junioris interdum refert. Testa tota purpurea aut fusco-purpurascens, intus iridescens, epidermide nigerrima nitida vestita, sulcisque radiantibus plurimis confertissimis 150 usque ad 160 instructa est, qui quidem sulci in regione apicum partim dichotomi sunt et valvarum marginem versus validiores fiunt. Apices in specimenibus adultis decorticati et erosi, margarita splendente insignes sunt. Quot sulci, tot crenulis margo circumdatur.

*Mytilus niger*, Gmel. p. 3362, le *Dotel* Adansonii (*Hist. du Senég.* p. 211. t. 15. f. 3) certe species peraffinis est, sed illius testa sub

epidermide nitidissime lactea vocatur. Præterea "le Dotel" major, minore sulcorum numero instructus est, nam centenos tantum sulcos in eo numeravit auctor.—Clar. Sylv. Hanley in describendo *Mytilo nigro* (An Illustr. and Descr. Cat. of Recent Shells, pt. ii. p. 245?) nostram ipsam concham ante oculos habuisse videtur.—*Mytilus striatulus*, L. Schröt. Einl. vol. iii. p. 449. t. 9. f. 16, statura aliena striisque in latere basali deficientibus imprimis distinguendus esse videtur. *Mytilus tenuistriatus*, Dkr. Moll. Guin. p. 47. t. 9. f. 1, 2, 3, species multo minor, ad *Volsellas* pæne accedit.

#### 5. MYTILUS MORRISI.

*M. testa ovato-trigona, modice convexa, fusco-purpurea, epidermide cornea vestita, concentricè striata, costulis confertis granosis mature furcatis sculpta; dorso parum compresso, subangulato; umbonibus terminalibus incurvis; margine baseos fere recto; cardine utriusque valvæ denticulis nonnullis instructo; marginibus crenis parvis circumdatis.*

*Hab.* Ad Guineam.

Testa formam *Mytili atropurpurei* pæne refert, sed habitu minore, costulis granosis mature furcatis et epidermide obscure cornea facile distingui potest. *Mytilus senegalensis*, Lam., valvis angustis et margine dorsali postico basi subparallelo imprimis differt.

#### 6. MYTILUS ADAMSIANUS.

*M. testa ovato-trigona, utrinque obtuse carinata, solidula, costis mature bifidis eleganter granosis sculpta, fusco-purpurascens et albida; epidermide cornea vestita; umbonibus terminalibus; margine crenato.*

*Hab.* Ad Isthmum Panamense (*Cuming*).

Testa parva 10 lin. longa,  $5\frac{1}{2}$  lin. alta,  $4\frac{1}{2}$  lin. lata, *Mytilo Magellanico* juvenili similis est, sed costulis confertis altioribus, distinctissime granosis facile distinguitur. Margo basalis pæne rectilineus. Color utrinque fusco-purpurascens, venter albidus. Facies interna albida, marginem versus livida et vivide margaritacea. Fossula ad ligamentum recipiendum satis profunda. Apices acuti terminales. Cardo in valva sinistra dentibus duobus, in dextra unico tantum instructus.

#### 7. MYTILUS OBSCURUS.

*M. testa ovata, parva, solidula, concentricè obsoleteque striata, albida, aliquantulum rufescente, epidermide obscure cornea opaca vestita; apicibus obtusis incurvis sæpius decorticatis, paullo distantibus; facie interna parum margaritacea; cardine prorsus edentulo; extremitate antica intus paullulum excavata.*

*Hab.* Ad Sydney urbem Novæ Hollandiæ.

Concha parva  $10\frac{1}{2}$  lin. tantum longa, 6 lin. alta et  $4\frac{1}{2}$  lin. lata, *Mytilo eduli* nondum adulto, qui pellucidus Penn. dicitur, haud dissimilis est.



## 8. MYTILUS CURVATUS.

*M. testa parva, solidula, subtrigona, rufo-violacea, in dorso alta, in basi valde arcuata, costulis dichotomis instructa; epidermide fusco-cornea vestita; umbonibus parvis inflexis; toto margine excepta fissura crenulato; cardine in valva utraque denticulis duobus vel tribus munito.*

*Hab.* Ad Philippinarum insulam Luzon.

Conchula parva, vix 6 lin. longa, 4 lin. alta,  $2\frac{3}{4}$  lin. lata, forma pæne trigona insignis. Margo cardinalis declivis leviter arcuatus cum margine posteriore alto angulum obtusum format; margo basalis in fissura, quæ ad byssum emittendam destinata est, valde curvata. Umbones perparum recedentes. Costulæ furcatæ marginem versus posticum distinctiores evadunt. Fossula ad ligamentum recipiendum satis profunda. Pagina interna marginem versus vivide iridescens.

## 9. VOLSELLA GUBERNACULUM.

*V. testa ovata, valde fornicata, utrinque subangulata, concentricè rugoso-striata, pallide flavescente, virgis inæqualibus violaceis radiata, epidermide cornea vestita; umbonibus prominentibus incurvis violaceis perparum distantibus; ligamento brevi.*

*Patria ignota.*

Testa subsolida, antice attenuata, postice lata et rotundata, 18 lin. longa, 11 lin. alta,  $8\frac{1}{2}$  lin. lata, præsertim dorso valde fornicato et basi parum sinuata pæne recta insignis est. Umbones incurvi violacei, nitentes, glabrati marginem anticum prævissimum eminent. Ligamentum pro magnitudine testæ breve, paulo immersum est. Color varum internus pallide luteus, umbones versus violaceus.

## 10. VOLSELLA ARATA.

*V. testa elongata, subrhombea, tumida, liris costisque postice crassioribus arata, colore antice lacteo vel pallide rubente, postice fusco-violaceo, epidermide crassa obscure cornea.*

*Hab.* In Novæ Hollandiæ litore septentrionali.

Concha 29 lin. longa, 12 lin. alta,  $10\frac{1}{2}$  lin. crassa, quoad formam *Volsellæ rhomboideæ*, Hanl., affinis est. Valvæ linea obliqua pallida ab umbonibus tumidis ad posticam baseos partem paulo sinuatam decurrente et colore duplici in duas partes dividuntur. Striæ incrementi, et parte fissæ, inde a linea illa obliqua validiores fiunt, ita ut testa sulcis exarata appareat. Facies interna nitorem margaritaceum languidum præbet. Ligamentum angustum longum totum pæne marginem cardinalem tenet.

## 11. VOLSELLA FORTUNEI.

*V. testa parvula, ovato-oblonga, subtrigona, utrinque obtuse carinata, concentricè rugose striata, superius violacea, inferius albidula, epidermide virente obducta; margine baseos subrecto; dorso subangulato; umbonibus parvulis prominulis.*

*Hab.* Mare Chinense. Attulit clar. Fortune.

Conchula parva,  $5\frac{1}{2}$  lin. longa,  $2\frac{3}{4}$  lin. alta, 2 lin. lata, habitu *My-*

*tili minimi*, sed umbonibus recedentibus magis ad *Volsellas* accedit. Striæ concentricæ antice rugosæ. Cardo plane edentulus. Ligamentum longum et tenue. Pagia interna superius pulcherrime violacea et margaritacea.

#### 12. VOLSELLA SUBPURPUREA.

*V. testa elongato-ovali, angusta, tenui, subpurpurea, epidermide cornea nitida induta, concentricè tenerrimeque striata, striis obsoletissimis ab umbonibus radiantibus marginem posticum versus evanescentibus instructa, antrorsum angustata, posteriorem partem versus parum dilatata, in medio dorso subfornicata paullulum angulata, margine baseos subsinuata; umbonibus parvis, in speciminibus adultis decorticatis parum prominentibus.*

*Hab.* In Senegallio flumine.

Testa 15 lin. longa,  $5\frac{3}{4}$  lin. alta,  $5\frac{1}{4}$  lin. lata, sculptura, colore et cardiis structura *Volsellæ tristi* affinis, præsertim margine cardiis multo longiore, basi subsinuata et valvis tumidoribus differt.

#### 13. VOLSELLA TRISTIS.

*V. testa elongata, recta, tenui, fusco-purpureo et albedo variegata, concentricè obsoleteque striata, pæne glabrata, sulcis ab apicibus radiantibus confertissimis, tenuissimis, sub vitro tantum perspicuis, instructa; epidermide nitida cornea vestita; facie interna albida et livida marginem versus iridescente.*

*Hab.* Ad Chusan teste Benson.

Concha forma angusta, longe porrecta insignis,  $15\frac{1}{2}$ '' longa,  $6\frac{1}{4}$ '' alta et  $4\frac{1}{4}$ '' crassa est. Altitudo ejus maxima in  $\frac{1}{3}$  longitudinis vel eo in loco sita est, ubi margo dorsalis anticus, quem ligamentum breve et tenue occupat, finem habet. Margo ventralis perparum arcuatus pæne rectus, antrorsum paullo adscendit et mucrone vel potius ala parvula parum ultra apices prominente terminatur, in qua costulæ nonnullæ observantur. Præterea monendum est, marginem dorsalem plicis nonnullis obsoletissimis instructum esse. Internus testæ color livido-albus parum margaritaceus. Cardo utriusque valvæ sub apicibus dentibus parvulis 4-5 munitus. Præterea in fine ligamenti, quod fossulam haud profundam tenet, crenarum 10-12 series observari potest, quæ *Nucularum* cardinem in mentem vocant.

#### 14. VOLSELLA PERFRAGILIS.

*V. testa elongata, recta, compressa, tenerrima, subdiaphana, parum splendida, pallide cornea, postice virescente maculisque minimis pallide fuscis aspersa, striis incrementi concentricis tenuissimis instructa, costa obsoletissima recta ab umbonibus prominulis ad posticam baseos partem decurrente, margine dorsali recto longissimo, margine ventrali antice ascendente; ligamento perlongo, angusto, margarita marginem posteriorem versus iridescente.*

*Hab.* Ad insulas Moluccenscs.